Greener Greenville

A Sustainability & Climate Action Plan

Green Ribbon Advisory Committee (GRAC) Members
Rita Bolt Barker, Angela Halfacre, Rob Howell, Scott Johnston,
Tom Kester, Eric Snider, Doug Webster (Chair)
City Staff Liaison: Brian Graham

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Introduction

Overview

The purpose of *Greener Greenville* is to provide goals and strategies, and ultimately, specific implementation tasks to sustain Greenville. To meet this purpose, *Greener Greenville* identifies the many **sustainability** initiatives adopted in the City's Comprehensive Plan and other citywide plans, focuses on reducing the City's **carbon footprint**, determines additional initiatives, and adds clarity to implementing short and long range actions that will make the City of Greenville truly sustainable. *Greener Greenville* is intended to be a proactive tool and an integral building block for future plans and initiatives within the City. The implementation of *Greener Greenville* will result in more efficient and responsible City operations, generate substantial financial savings, enrich the City's livability, and serve the broader community.

Living sustainably entails taking the long view of our actions and their consequences. A commitment to sustainability promotes the well being of people and the City over the long term. The City of Greenville and its residents have joined forces to make **institutional sustainability** and environmental citizenship primary priorities. Greenville is seeking to be the greenest Greenville in the United States and efforts so far have produced tangible benefits. The City of Greenville has been recognized as a leader in these endeavors and has garnered widespread publicity. This plan provides a "greenprint" to guide future actions likely to promote Greenville's economy, environment, and sense of community.

Climate Action in the Plan

In 2006, Mayor Knox White signed the *U.S. Conference of Mayors Climate Protection Agreement* committing the City to reducing its carbon footprint. To-date, 1,055 mayors, representing almost 90 million U.S. citizens, have signed-on. The City is also a member of **ICLEI- Local Governments for Sustainability**, a global network of over 1200 cities (600 in U.S.A.), committed to **sustainability principles**.

The City commissioned both a community-wide and government operations **Greenhouse Gas Emissions Inventory** in 2010 from Efficient Energy Advisors, LLC (see appendix A for the executive summaries). These reports guided the Green Ribbon Advisory Committee to select the broad areas that would have the biggest potential to lower Greenville's carbon footprint. The report identified the per capita **carbon dioxide (CO_2) equivalent emissions** of the City of Greenville as 45.2 tons per year compared to a national average of 19.1 tons per capita. *Greener Greenville's* goals were designed to have a major impact on reducing these per capita emissions.

Guiding Principles

The City of Greenville has several existing statements and goals that shape sustainability and climate action planning. As a result of the City's existing commitments and vision, the Green Ribbon Advisory Committee was formed to help enrich the City's sustainability focus areas.

City of Greenville Vision Statement

In 2006, the City Council developed a vision statement of Greenville in the year 2021. The vision states:

> *Greenville is a beautiful green, welcoming, world-class City. Greenville is a community of neighborhoods, has a vibrant downtown, and has a growing economy. Greenville is an inclusive, diverse community, with engaged citizens and leaders. Greenville is a great place to live and call home.*

City of Greenville Community Goals

Taking that vision and direction from City Council, staff developed a series of Community Goals that better define what is necessary for Greenville to become the City described in the vision statement. These goals, confirmed by City Council in a work session and adopted as part of the 2009-2010 Operating Budget for the City of Greenville, emphasize quality of life and include specific performance measures.

- Greenville is a **SAFE CITY** where citizens and visitors are safe and feel confident that a response will be there at all times.
- Greenville is a **SUSTAINABLE CITY** that protects and conserves its water, air, and green space, and promotes public health and wellbeing.
- Greenville is a **PROSPEROUS CITY** that promotes the expansion of economic activity in its downtown and commercial corridors, fosters a healthy climate for new and existing businesses, and provides economic opportunities for all residents.
- Greenville is a **CITY OF NEIGHBORHOODS** with quality housing for all incomes and engaged communities.
- Greenville is a **MOBILE CITY** with a comprehensive transportation network that allows connectivity through multi-modal options.
- Greenville is a **CITY OF CULTURE AND RECREATION** with an emphasis on the arts, recreation opportunities, and community events.
- Greenville is an **INCLUSIVE CITY** that celebrates diversity from a variety of backgrounds and cultures, and supports our children, families, and seniors.

Green Ribbon Advisory Committee

Establishment

The Green Ribbon Advisory Committee (GRAC) was established by ordinance in August 2010. After a highly competitive selection process, the seven GRAC members met for the first time in November 2010. Its bylaws were approved by City Council resolution in January 2011. The Committee's vision, mission and purpose were defined in those bylaws, and align with the City Council established vision statement for the community and Community Goals. In March 2011 the GRAC formed three ad-hoc committees: Mobility, Energy and Buildings, and Recycling and Waste Management; and invited City staff to participate on each. In July 2011, following a public workshop and another highly competitive process, the GRAC selected additional citizen members to participate in each ad-hoc committee.

Purpose

The purpose of the Green Ribbon Advisory Committee is to advise City Council, the City Manager, and other city staff on the development of programs and initiatives, including the development of a Sustainability and Climate Action Plan, which will distinguish Greenville as a leader in sustainability efforts.

Vision

The City of Greenville will offer and support a sustainable quality of life for its citizens. A sustainable quality of life includes conservation of air, water, energy and land resources, effective minimization and management of waste, good neighborhood planning, and a comprehensive multi-modal transportation network for improved livability. Greenville will be a city in which sustainability is considered instrumental to the long-term success of the City. The Green Ribbon Advisory Committee will be an integral partner of the City and region in encouraging, supporting, and promoting sustainability so that the Greenville community can incorporate sustainability into its analysis and management of economic development, environmental measures, and quality of life.

Mission Statement

The Green Ribbon Advisory Committee shall promote a culture of stewardship within City government and our community to preserve and enhance our natural resources, economic needs and opportunities while addressing quality of life for present and future generations in the City of Greenville. To this end the committee shall recommend and comment upon programs and initiatives which will reduce the City's environmental impact and distinguish Greenville as a leader in sustainability. In short, the committee's goal is to "Keep the Green in Greenville."

Ad-hoc Committee Members

Ad-hoc committees were formed to examine specific strategies and include additional citizens competitively selected by the GRAC as well as City Staff. Brief committee member bios can be found in Appendix C.

Mobility	Energy and Buildings	Recycling and Waste Management
GRAC Members	**GRAC Members**	**GRAC Members**
Angela Halfacre	Rob Howell	Rita Bolt Barker
Scott Johnston	Scott Johnston	Rob Howell
Tom Kester	Doug Webster	Eric Snider
Ad-hoc Members	**Ad-hoc Members**	**Ad-hoc Members**
Jean Crowther	Mark Godfrey	Nathan Galbreath
Yancey Fouché	Stephanie McCauley	Elizabeth Garrison
Peter Knudsen	Neil Milani	Jeffrey Goetz
Kirsten Schoettelkotte	Todd Usher	Jodi Hajosy
Dennis Wiese	Brad Van Meter	Eric Vinson
City Staff Members	**City Staff Members**	**City Staff Members**
Greg Baney	James Crosby	Stephanie Holland
Wayne Leftwich	Ron Satcher	Brittany Keller
Wil Ravenhorst	Nathalie Schmidt	Mildred Lee

Several interns, fellows and volunteers have assisted in the development of *Greener Greenville*, they are:

Clemson University: Stephen Burr, Anna Brown, Scott Aulen
Furman University: Andy Wallin, Coleman Allums, Brittany Berger

Plan Development

Process

The Green Ribbon Advisory Committee (GRAC) wrote this plan framework based on input from three ad-hoc committees, City Staff and input gathered from previously adopted City planning documents. Also, GRAC hosted a public meeting on June 14, 2011 where it gathered additional public input, which was incorporated into this document. Concurrent to this public review period this document is being shared with City department heads for their review. The GRAC will incorporate comments received by Greenville citizens at the January 24, 2012 public workshop, an online survey, and those submitted by City Staff into this plan. The plan is organized around eleven goals. The goals are organized into four major categories: Mobility; Recycling and Waste Management; Energy and Buildings; and Natural Systems and Outreach. Each goal has strategies identified to achieve the goal.

Next Steps

The GRAC intends to present this document to City Council in Spring 2012. Once *Greener Greenville's* goals and strategies are approved by the City Manager and City Council, the Green Ribbon Advisory Committee and City staff will move-on to the next part of the plan's development process. Detailed implementation tasks will be developed, with the goals and strategies found within serving as the framework. Each task will be accompanied by specific metrics to track progress, a party responsible for implementation, and a priority timeline, etc.

Adaptability

The City of Greenville acknowledges that the field of sustainability is complex and constantly evolving. This plan has been designed to meet and adapt to the challenges inherent in this understanding of sustainability. This plan will be revised and updated on a regular basis, and progress tracking will be consistent and transparent.

Of course, the City's ability to implement such initiatives will depend upon many dynamic factors, some of which are beyond the City's influence or control. Changing government policies, fluctuating energy prices, unpredictable economic developments and financial resources, the methods used by our utility companies to produce our electricity, technological innovations, and other variables will determine the actual scope and pace of the City's progress.

While such uncertainties can be daunting, it is critical that aggressive goals are set now, even if those goals will necessarily be adjusted and refined as conditions change and circumstances require. Cost is a fundamental consideration. Proposed initiatives will be funded primarily by sources both inside and outside the City's operating or capital improvement budgets, including projected energy savings, grants from government agencies, corporations, and foundations, federal and state incentives, deferred maintenance projects, performance management contracts, and revolving loan funds.

Goals and Strategies

Note: Bold words can be found in the glossary; endnotes indicate original source for goal/ strategy recommendation.

Mobility

1. **Encourage quality growth and repurposing that supports multi-modal transportation**
   a. Identify viable higher density development areas
   b. Support and simplify regulations and policies that encourage redevelopment within infill areas[i]
   c. Improve quality of life by making work, retail, play and home accessible[ii]
   d. Engage the community in **smart growth** decision making[iii]

2. **Expand bicycling and walking as major forms of transportation**
   a. Implement the *Bicycle Master Plan*[iv]
   b. Create **complete streets**[v]
   c. Encourage bicycle and pedestrian friendly development[vi]
   d. Implement the *Trails and Greenways Master Plan*[vii]

3. **Promote cooperative and public transportation**
   a. Support the implementation of Greenlink *Transit Vision and Master Plan*[viii]
   b. Support efforts to reduce wait times, improve communication and improve connectivity of public transportation[ix]
   c. Expand from **hub and spoke** to service critical areas directly
   d. Maximize synergies during implementation of *Bicycle Master Plan* and *Transit Vision and Master Plans*
   e. Partner to be part of regional rail service[x]
   f. Encourage carpooling and car sharing[xi]

4. **Expand use of alternative-fuel and low-emissions vehicles**[xii]
   a. Support alternative-fuel and low-emission vehicle initiatives and infrastructure
   b. Transition the City fleet to alternative fuel and low-emission vehicles
   c. Promote alternative-fuel and low-emission vehicle purchase

Recycling and Waste Management

1. **Manage solid waste to minimize adverse impacts on the environment**
   a. Reduce non-recyclable **solid waste**[xiii]
   b. Reduce environmental and economic costs of transporting solid waste
   c. Transport solid waste to facilities that comply with environmental laws, **best management practices** and **sustainability principles**
   d. Determine feasibility of mitigating **legacy landfill** gas[xiv]
   e. Convert legacy landfills into **community assets**

2. **Increase recycling and reuse of materials across sectors.**[xv]
   a. Increase household participation and percent of total waste recycled
   b. Promote recycling participation for multi-family housing, businesses and educational institutions
   c. Promote the conversion of recyclable materials into useful products
   d. Foster the use of reusable and recyclable materials

Energy & Buildings

1. **Implement sustainable practices in city buildings and operations**
   a. Comply with industry accepted **green building standards**[xvi]
   b. Adopt an **Environmentally Preferable Procurement (EPP)** policy
   c. Improve **Resource Use Efficiency**

2. **Promote sustainable practices throughout the community's built environment**
   a. Allow and incentivize development to follow industry accepted **green building standards** as an alternative to portions of currently adopted building codes[xvii]
   b. Encourage use of renewable and sustainable building products[xviii]
   c. Encourage use of energy-efficient and water-saving products and practices[xix]

3. **Promote use of renewable energy**[xx]
   a. Advocate for renewable energy solutions with local public utilities
   b. Enable and encourage residents to purchase and/or produce renewable energy
   c. Encourage use of underutilized spaces for renewable energy production

Natural Systems & Outreach

1. **Maintain natural systems for the benefit of all stakeholders**
   a. Protect natural resources[xxi]
   b. Preserve open space[xxii]
   c. Protect native plant species and biodiversity
   d. Improve community access to healthy, local food[xxiii]
   e. Promote **eco-tourism**

2. **Educate and promote sustainability**
   a. Educate the community about **sustainability principles.**
   b. Promote and market *Greener Greenville*
   c. Recognize businesses and other entities that implement exemplary sustainability programs[xxiv]
   d. Consider all stakeholders when implementing *Greener Greenville*
   e. Promote sustainable business networks

Appendix A: Glossary

Best Management Practices- most effective and practical methods/techniques/means of achieving an objective.

Built Environment- human modified physical environments which provide the setting for human activity. Often referring to physical structures and infrastructure and ranging in scale from personal shelter to entire cities and complete infrastructure systems.

Carbon Footprint- a measure of the total amount of carbon dioxide (CO_2) and methane (CH_4) emissions of a defined population, system or activity, considering all relevant sources, sinks and storage within the spatial and temporal boundary of the population, system or activity of interest. Calculated as carbon dioxide equivalent (CO_2e) using the relevant 100-year global warming potential.

Climate Action Plan- a plan developed to identify key sources and emissions of greenhouse gases (a greenhouse gas emissions inventory) and to devise a strategy for steps to reduce the emissions in order to minimize future effects on climate.

Carbon Dioxide (CO_2) Equivalent Emissions- the emissions of all greenhouse gases over a period of time in a set geographic area converted mathematically to an equivalent amount of carbon dioxide.

Community Assets- a broad term referring to anything (person, physical structure, place, business, etc.) that can be leveraged to improve the quality of a community. This may include turning waste into energy, integrating recreation and conservation, or using underutilized space for food production, among others

Complete Streets- roadways designed and operated to enable safe, attractive, and comfortable access and travel for all users, including pedestrians, bicyclists, motorists, and public transport users of all ages and abilities.

Eco-tourism- a form of tourism involving visiting fragile, pristine, and usually protected areas, intended as a low impact and often small scale alternative to standard commercial tourism. Includes programs that minimize negative aspects of conventional tourism on the environment and enhances the cultural integrity of local people.

Environmentally Preferable Procurement- a procurement process which involves adding environmental considerations to purchasing decisions along with traditional factors such as performance, price, health, and safety.

Green Building Code and Standards- sets of rules created by various organizations which establish minimum requirements for elements of building construction and operation, focused on lessening negative impacts to natural environment. Typically includes guidelines for construction materials or heating/cooling operations. Examples include Earth Craft, Energy Star, and LEED.

Greenhouse Gases (GHG)- gases which trap heat in the atmosphere, generally occurring solely through human activities (e.g., fluorinated gases) or a combination of natural processes and human activities (e.g., carbon dioxide). Principal greenhouse gases due to human activities:

- Carbon Dioxide (CO_2): Carbon dioxide enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
- Methane (CH_4): Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- Nitrous Oxide (N_2O): Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
- Fluorinated Gases: Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances (i.e., CFCs, HCFCs, and halons). These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as High Global Warming Potential gases ("High GWP gases"). (US EPA)

Greenhouse Gas (GHG) Emissions Inventory- a count of the amount of greenhouse gases emitted to or removed from the atmosphere over a specific period of time (e.g., one year). A greenhouse gas inventory also provides information on the activities that cause emissions and removals, as well as background on the methods used to make the calculations. Policy makers use greenhouse gas inventories to track emission trends, develop strategies and policies and assess progress. Scientists use greenhouse gas inventories as inputs to atmospheric and economic models.

Green Ribbon Advisory Committee (GRAC)- a committee established by ordinance in August 2010 by Greenville City Council. The purpose of the Green Ribbon Advisory Committee is to advise City Council, the City Manager, and other city staff on the development of programs and initiatives, including the development of *Greener Greenville*, which will distinguish Greenville as a leader in sustainability efforts.

Hub and Spoke- pattern of network development which focuses on a limited number of strategic nodes (hubs) complemented by a much higher number of connecting corridors or segments (spokes). Often used in transportation networks for efficiency and simplicity.

Institutional Sustainability- the embodiment of principles and practices of sustainability (financial, societal, and environmental) into the organizations and institutions of a community.

Legacy Landfill- a closed landfill, often one which has a continuing environmental impact such as release of methane gas.

Multi-modal Transportation Network- a transportation system focused on connecting multiple modes of transportation such as private automobiles, bicycles, pedestrians, and public transit.

Natural Systems- systems that originate in nature which have not been made or strongly altered by mankind.

Renewable Energy- energy which comes from natural resources such as sunlight, wind, rain, tides, and geothermal heat and which are naturally replenished.

Resource Use Efficiency- the process of optimizing resource consumption to attain economic and environmental progress through more efficient use of resources and lower pollution. The concept also involves minimizing the resources used in producing a unit of output while reducing the impacts on the natural environment. (United Nations Economic and Social Commission for Asia and the Pacific, Eco-Efficiency Indicators, 2009)

Smart Growth- an urban planning and transportation theory that concentrates growth in compact walkable urban centers to avoid sprawl and advocates compact, transit-oriented, walkable, bicycle-friendly land use, including neighborhood schools, complete streets, and mixed-use development with a range of housing choices. Smart growth values long-range, regional considerations of sustainability over a short-term focus.

Solid Waste- any discarded material that is abandoned by being disposed of, burned or incinerated, recycled, or considered waste-like.

Stakeholders- a person, group, or organization that has direct or indirect interest in an organization because it can affect or be affected by the organization's actions, objectives or policies.

Sustainability Principles- set of guidelines intended to help a community ensure its social, economic, and environmental systems are well integrated and will endure. Six common sustainability principles are:

1. Maintain and, if possible, enhance, its residents' quality of life.
2. Enhance local economic vitality.
3. Promote social and intergenerational equity.
4. Maintain and, if possible, enhance, the quality of the environment.
5. Incorporate disaster resilience and mitigation into its decisions and actions.
6. Use a consensus-building, participatory process when making decisions.

Sustainability- actions which create and maintain conditions under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic and other requirements of present and future generations; important to ensuring the continuation of water, materials, and resources to protect human health and our environment.

Underutilized space- properties (buildings and open spaces) that are not being used in the way designated for the space or are not being put to the "highest and best use".

Appendix B: Committee Member Bios

Gregory Baney

Gregory Baney is the Planning & Grants Manager for Greenlink Transit. As such he is responsible for the financial management as well as economic development of the Greenville Transit Authority. Mr. Baney works to create the infrastructure and partnerships required to make public transportation a vital part of community life. Greenlink transit defines a livable community as one that offers an array of multi-modal transportation options that meet public demand and assist in creating a more sustainable environment.

Rita Bolt Barker

Rita Bolt Barker, an environmental attorney at Wyche, focuses her work on sustainability issues and environmental compliance. Attorney Barker not only serves as the chair of the firm's Green Committee, but is also active in the community as a member of the Board of Directors and Environmental Task Force for Greenville Forward and a member of the Environmental Issues Committee of the Greenville Chamber of Commerce.

James Crosby

James Crosby is the supervisor for Building Services in the Public Works Department for the City of Greenville. He has been responsible for the day to day maintenance and repair of 197 facilities in the city since 2006. His division is directly involved in upgrading electrical lighting, plumbing fixtures and HVAC equipment to devices that use less energy and water and that are cost-effective. James works with other departments to plan renovations that incorporate energy efficient materials, appliances, technology and techniques to support the City's sustainability initiatives.

Jean Crow Crowther

Jean Crow Crowther is a Planner with Alta Planning + Design, a national firm specializing in bicycle, pedestrian, trails and greenways planning. Previously, Jean spent seven years as an advocate for outdoor recreation and active lifestyles; first, generating volunteerism and resources for the parks and trails system of Austin, TX, then, leading the Bike Town campaign, which earned Spartanburg the first national designation as a Bicycle Friendly Community in South Carolina. Jean is a founding board member of the nonprofit globalbike, inc. and also serves on the Upstate Air Quality Committee.

Yancey Fouché

Yancey Fouché is the Assistant Director for Study Away and International Education at Furman University. In this role, she is committed to connecting Furman's international students and professors to greater Greenville through trails and alternative transportation. She also works to ensure that students who study abroad apply sustainable practices they have experienced overseas to their own lives here in Greenville. Yancey completed a graduate degree in aquatic resource ecology and management, and continues to learn about and practice responsible citizenship. She is also a member of Upstate Forever.

Nathan Galbreath

Nathan Galbreath is a husband and father of three who lives and works in the City of Greenville. He is an attorney with Nelson Galbreath, LLC. His practice focuses primarily on real estate and business law. Prior to moving to Greenville, Mr. Galbreath practiced corporate bankruptcy and insolvency law in the Dallas, Texas law office of Patton Boggs, LLP. He is a graduate of Furman University and holds post graduate degrees in law and Latin American Studies from Tulane University. He has lived, worked and studied in Asia, Europe, Africa and North, South and Central America.

Elizabeth Garrison

Elizabeth Garrison started Ever-Green Recycling, a local recycling service, in 2007. Garrison and the Ever-Green Recycling team specialize in commercial and industrial recycling. Garrison is

active in state and regional recycling associations. Garrison also volunteers with the Small Business Development Council, and Junior Achievement. Garrison grew up on Denver Downs Farm, her family's farm in Anderson, SC; she is a 1995 graduate of Clemson University.

Mark Godfrey

Mark Godfrey is an architect with McMillan Pazdan Smith where he specializes in sustainable design, site planning and project management within their retail studio. He currently serves on the Board of Directors for the SC Chapter of the USGBC, serves as Chair of their Upstate Branch and has volunteered at the Sustain SC Conference & Expo since its inception in 2009. Mark is a LEED Accredited Professional, a Certified Energy Manager and has a Masters of Architecture from Clemson University. He and his wife Lura designed and built their Earthcraft home in downtown Greenville in 2007.

Jeff Goetz

Jeff Goetz is the Director of Sustainability and Energy Management for Fluor Global Services. Jeff has over 18 years experience in facilities engineering and has worked in a variety of roles during his career. Jeff excelled as a mechanical design engineer, project engineer, and project manager, then moved into the Director of Sustainability and Energy Management role to utilize his project management and engineering experience in assisting both Fluor and Clients with meeting their energy challenges. Jeff is a licensed Mechanical Engineer in seven states, a LEED AP and a Fluor Fellow in the area of Sustainability and Energy Management.

Brian Graham

Brian Graham is the Greenway & Sustainability Manager for the City of Greenville and serves as Staff Liaison for the Green Ribbon Advisory Committee, coordinating committee and other sustainability initiatives. He is responsible for the implementation of the City's *Trails and Greenways Master Plan*, including new trail development and management of the existing trail network/ Swamp Rabbit Trail. Brian was named the Association of Pedestrian and Bicycle Professionals "Young Professional of the Year" in 2011, and is a member of the American Institute of Certified Planners.

Jodi Price Hajosy

Jodi Price Hajosy has nearly 20 years experience working in sustainability. Having both undergraduate and graduate degrees in Occupational & Environmental Health, she has spent her career protecting employees and the environment. She began her career in heavy manufacturing, working both in the United States and abroad. For the past 4 years she has been working in the non-profit world, promoting sustainability. She is currently a Board Member of Greenville Organic Foods Organization and was the co-chair of Greenville's first ever Urban Farm Tour.

Angela Halfacre

Angela Halfacre is Director of the Shi Center for Sustainability at Furman University and a Professor in Political Science and Earth and Environmental Sciences. Nationally, she is on the Steering Committees for the Association for the Advancement of Sustainability in Higher Education Sustainability Tracking and Assessment Ranking System, Second Nature/American Colleges and Universities President's Climate Commitment Implementation. Regionally, Dr. Halfacre is currently chair of The Duke Endowment Task Force on Sustainability, a member of the Greenville Forward Board of Directors, and also co-chairs the Furman's Sustainability Planning Council.

Stephanie Holland

Stephanie Holland is the City of Greenville's Livability Grant Coordinator and Brownfield Program Coordinator. She is working with Community Development to manage the $1.8 million Connections for Sustainability grant the City received from Housing and Urban Development (HUD) and the Federal Transit Authority (FTA). Through the Connections project, she will focus on affordable housing, brownfield reuse, and the community's access to transit, parks, and

economic corridors. With a degree in Landscape Architecture, Stephanie is committed to making Greenville a model of sustainability beginning from the ground up.

Rob Howell

Rob Howell is a commercial real estate broker and developer for Windsor Aughtry Company. His most recent project, Little Green Houses, created a portfolio of energy efficient affordable housing. He was also instrumental in Windsor Aughtry's decision to install the state's largest solar thermal array atop the Main@Broad building in downtown Greenville. Mr. Howell is Vice President for the Friends of Paris Mountain State Park and is a member of the Upstate Protectors committee of Upstate Forever.

Scott Johnston

Scott Johnston is the founder of Johnston Design Group with the purpose of promoting a sustainable built environment for the Upstate of South Carolina. Mr. Johnston's commitment to a sustainable built environment is demonstrated by his firm's completion of the first LEED Platinum certified new building in South Carolina. Mr. Johnston is a first signatory of both the AIA 2030 Challenge for a carbon neutral built environment and the International Living Building Challenge. Mr. Johnston is the vice chair of the City of Greenville's Green Ribbon Advisory Committee.

Brittany Keller

Brittany Keller is the Recycling Coordinator for the City of Greenville. She works with city schools, businesses and individuals to provide education on waste reduction, recycling and litter. She is a member of the Carolina Recycling Association, Keep Greenville County Beautiful and serves as a mentor for Green Step Schools. She aims to increase sustainable behavior in Greenville, focusing on community awareness and participation.

Thomas Kester

Thomas Kester, a South Carolina licensed CPA, is currently chairman and treasurer of the Conestee Foundation, Inc which has acquired over 400 acres of land and built over ten miles of trail in Lake Conestee Nature Park. Mr. Kester is also the current treasurer and past chairman of Upstate Forever. He is a retired managing partner of the Greenville office of KPMG LLP, a global accounting and auditing firm, and worked as an audit partner on many of the major Upstate corporations.

Pete Knudsen

Pete Knudsen serves Clemson University as Assistant Campus Master Planner where his efforts focus on sustainable development and responsible use of campus resources. Prior to his tenure at Clemson University, Mr. Knudsen worked as a Transportation Planner with the Greenville County Planning Commission from 1999 – 2005. He has also been a leader in developing town-gown relations both in Clemson and nationwide. Pete organized one of the nation's first town-gown conferences in 2006 and helped launch the International Town & Gown Association (ITGA). Mr. Knudsen is also a LEED Accredited Professional and member of the American Institute of Certified Planners.

Mildred Lee

Mildred Lee is the Solid Waste Administrator for the City of Greenville. She is the Division Manager for all garbage, yard waste, trash, and recycling services within the City limits, which includes managing a staff of over 60 individuals. She started her career with the City in 1998 as a member of the Solid Waste Division. She has a Bachelor of Arts from Limestone College, is a member of the Solid Waste Association of North America (SWANA) and the Carolina Recycling Association (CRA).

Wayne Leftwich

Wayne Leftwich is a Community Planner for the City of Greenville. He is responsible for the planning and reporting of community development activities and performing environmental reviews on CDBG and HOME funded projects. He assists in the preparation and implementation

of neighborhood and corridor master plans that serve areas of low-to-moderate income residents. He is currently managing the $1.8 million Community Challenge/TIGER II grant project, 'Connections for Sustainability'. Wayne received a B.A. in Economics from Virginia Tech and a Master's degree in City and Regional Planning from Clemson University; he is a member of the American Institute of Certified Planners.

Stephanie McCauley

Stephanie McCauley serves as a Project Specialist for Climate Interactive, a nonprofit focused on sharing climate models and insights with leaders and citizens around the world. She has a degree in Applied Mathematics from USC and a Master's in Economics from UNC. Her previous experience includes working as a statistician and project coordinator with the State of SC Office of Research & Statistics, a planner for the SC Energy Office, and a GIS analyst for Arcadis Geraghty & Miller.

Neil Milani

Neil Milani is a control systems engineer at GE Energy in Greenville, SC involved in industrial-scale wind and solar projects in North America. He has also developed solar and wind projects on a residential scale, including North Carolina's first grid-intertied wind turbine near Kitty Hawk, NC. During his Master's studies, Neil was a visiting researcher at the University of Canterbury in New Zealand and his thesis work outlined a control system concept to integrate wind turbines into Antarctic research facilities to reduce diesel consumption. Such a project was subsequently developed into the "Antarctica's Largest Windfarm", at New Zealand's Scott Base.

Wil Ravenhorst

Wil Ravenhorst has served the City of Greenville as Assistant City Engineer—Traffic Engineering, since 2003. As lead Traffic Engineer, Wil supervises a staff responsible for managing traffic signals, signs and pavement markings throughout the City. Additional areas of responsibility include managing the City's Traffic Management Program, providing technical assistance on capital projects, and maintaining coordinated signals corridors for the safe and efficient flow of traffic. Wil received a B.S. in Civil Engineering from Florida State University and a M.S. in Transportation Engineering from the Georgia Institute of Technology; he is a registered professional engineer in South Carolina.

Ron Satcher

Ron Satcher is the Purchasing Administrator for the City of Greenville. He is responsible for all procurement activities along with contracts administration, records management, mail and courier services, and the City's Minority/Woman Business Enterprise (M/WBE) program. Ron is also the project administrator representing the city for the energy performance contract currently underway.

Nathalie Schmidt

Nathalie Schmidt is a Development Planner for the City of Greenville, in the Planning and Development division of Economic Development. One of her tasks is to regularly update and guide implementation of the city's long-range Comprehensive Plan, which addresses housing, transportation, and other resources impacted by projected population growth. She supports inclusive public outreach and measures that enable healthy, livable communities. Nathalie is a member of the American Institute of Certified Planners and is a LEED Accredited Professional.

Kirsten Schoettelkotte

Kirsten Schoettelkotte is a project designer at LS3P | Neal Prince Architects. She has a passion for sustainability and has been a leader in initiating firm-wide sustainable business practices which have recently expanded to include launching an on-site workplace composting program. Kirsten is a graduate of the University of Cincinnati, Master of Architecture program. Her thesis project utilized architectural and landscape remediation techniques to counteract the detrimental effects of mountaintop removal coal mining. Kirsten currently serves as the LEED project PR Manager for the United States Green Building Council, South Carolina Chapter.

Eric Snider

As Principal and Director of Business Development with SynTerra Corporation, Dr. Eric Snider has 35 years of experience as a chemical engineer. His areas of expertise include industrial wastewater engineering, pollution prevention, waste minimization and sustainability, strategic environmental services and hazardous waste management. Dr. Snider also sits on a national review panel for the U.S. EPA's Green Research program.

Todd Usher

As president of Addison Homes, Todd Usher heads a company uniquely committed to sustainable construction. He builds 100% of his homes to rigorous environmental standards such as Energy Star®, EarthCraft House™ and LEED® for Homes. A Clemson MBA and a variety of "green" credentials—including Master Certified Green Professional—support his environmental advocacy. Todd is an energy-efficiency consultant and third-party rater for Habitat for Humanity; he currently serves on the boards of Greenville Forward and Trees Greenville, and is past chairman of the Greenville County Planning Commission.

Brad Van Meter

Brad Van Meter is a Senior Account Executive for Ameresco, Inc. with over 27 years of experience. His particular area of expertise is in the development of Energy Savings Performance Contracts (ESPC) within all vertical markets. Brad was formerly Branch Manager of Johnson Controls in Greenville, SC and was instrumental in providing the LEED commissioning for the Hipp Hall Classroom Building at Furman University – the first LEED-certified building in the State of South Carolina. He later served in a Corporate role as Municipal Utility Solutions Manager for Johnson Controls implementing municipal infrastructure upgrade programs within the United States and Canada.

Eric Vinson

Eric Vinson is a Principal Planner with the Greenville County Planning Department with over twelve years experience in urban and regional planning. As a Principal Planner he is responsible for providing comprehensive planning services, and serves as team leader on community planning efforts including corridor and sub-area plans. Mr. Vinson is a member of the American Institute of Certified Planners and is a recent graduate of Leadership Greenville Class 37. Mr. Vinson's areas of expertise include local land use policy and sustainable development practices including Low Impact Development.

Doug Webster

Doug Webster is a commercial real estate agent for CB Richard Ellis (CBRE) of Greenville, specializing in clean energy and sustainable real estate practices. Mr. Webster is also a past board member of the U.S. Green Building Council- South Carolina chapter, a member of the International Society of Sustainability Professionals and a member of the NC Sustainable Energy Association. Mr. Webster is the first chair of the City of Greenville's Green Ribbon Advisory Committee.

Dennis Wiese

Dennis Wiese is currently with the South Carolina Institute for Energy Studies working on a Clean Cities grant to accelerate the rollout of electric vehicles in Greenville County. He is also on the advisory board for the Palmetto State Clean Fuels Coalition. Prior to that Mr. Wiese was Chief Electrical Engineer for General Motors electric and hybrid vehicle programs, and a GM representative for the United States Advanced Battery Consortium. While with GM, Mr. Wiese drove a battery electric vehicle as his personal vehicle for two years , and drove a variety alternative-fueled vehicles as well.

Appendix C: GHGEI Executive Summary

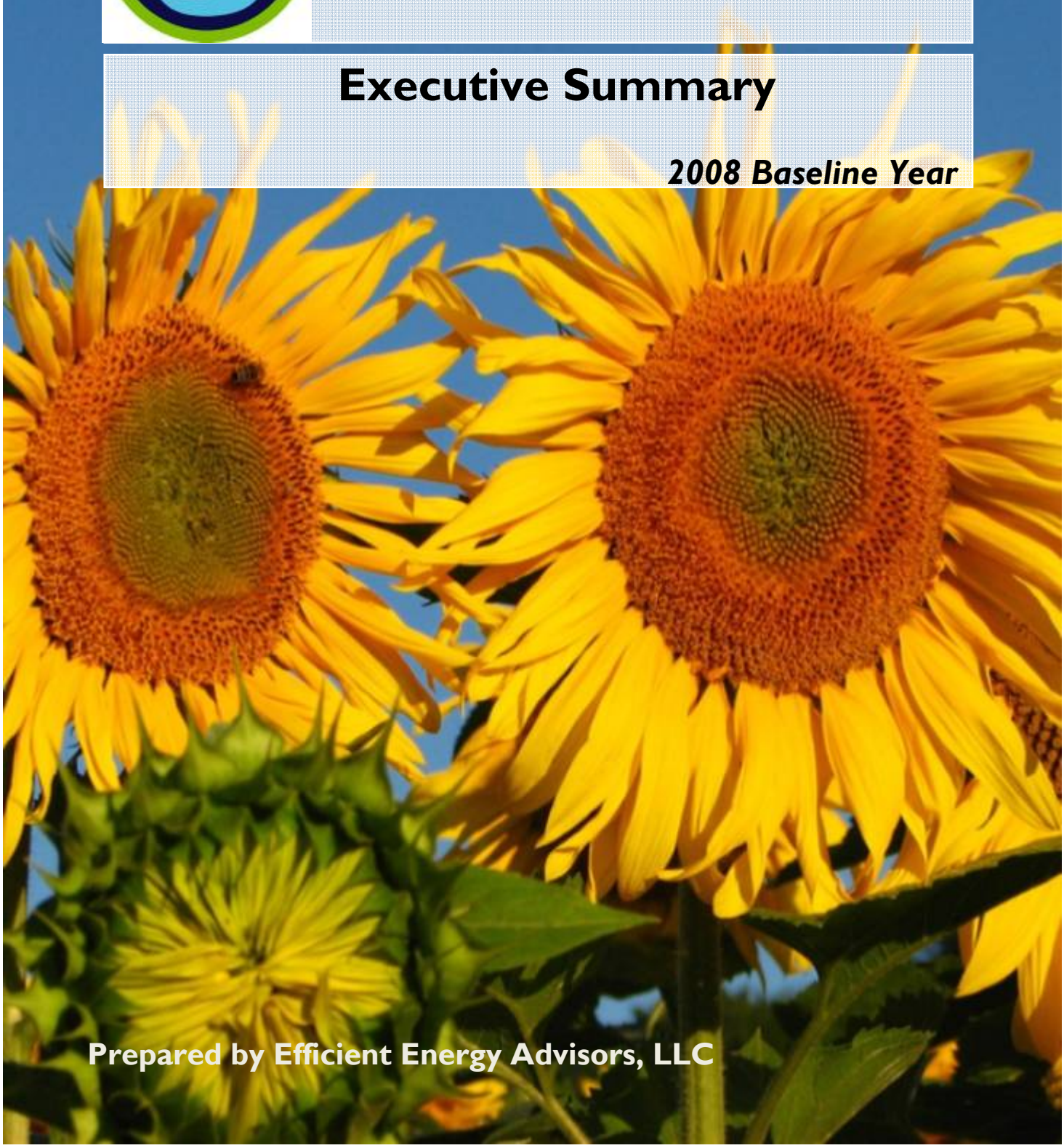
New information has come available recently about the City's landfill gas emissions that will likely reduce the reported emissions found in this executive summary/ report. This data will be updated prior to the release of the next draft of this document.

City of Greenville

GHG Emissions Inventory

Executive Summary

2008 Baseline Year



Prepared by Efficient Energy Advisors, LLC

City of Greenville Greenhouse Gas Emissions Inventory Report

The City of Greenville has recently completed this Greenhouse Gas Emissions Inventory, or Carbon Footprint, for the purpose of developing a baseline of current emissions to help inform future recommendations. This Greenhouse Gas (GHG) Inventory set a 2008 baseline year. The baseline year was chosen after evaluating its representative climate average and the availability of comprehensive data. The inventory reflects greenhouse gas emissions of the community limited by the boundaries of the City and includes a detailed emissions inventory of municipal (City government) operations. Use of this baseline data will assist the City in evaluating and prioritizing future opportunities to reduce greenhouse gas emissions and to project the effect of implementation of various measures alongside 'business as usual' scenarios. The results highlighted in this executive summary show the carbon dioxide equivalent (CO_2e) of common greenhouse gasses. Other gasses have a greater ability to trap heat in the atmosphere than CO_2. Other Gasses considered are methane (CH_4) (21 times the potency of CO_2 as a GHG; 21 X), nitrous oxide (N_2O- 310 X), hydro-fluorocarbons (HFC- 1,300 X), per-fluorocarbons (PFC- 7,600 X) and sulfur hexafluoride (SF_6- 23,900 X).

Community Analysis and Results

Within the boundaries of Greenville city limits, the community totals included greenhouse gas emissions from the following sectors:

•Residential •Commercial •Industrial •Transportation •Solid Waste •Closed Landfill

Data collection was made possible by third party vendors such as utility companies and solid waste haulers. Cooperative efforts by the S.C. Department of Transportation, Greenville County, and various City departments afforded reliable data for collection and presentation.

Community Results by Sector

During the 2008 calendar year, the community of Greenville produced a total of 1,864,050 metric tons of CO_2 equivalent. The population residing within the City limits for 2008 was 58,799 according to the U.S. Census Bureau. Therefore, per capita CO_2 equivalent emissions were 31.7 tons per year, or about 1.7x the national average (19.1 tons) due in part to factors such as the closed City landfill and commuting populations. Greenville County's *Multi-modal Transit Corridor Alternative Feasibility Study* (2010) shows the City's population doubling during the weekday due to employees commuting to jobs within the City limits. The transportation sector contributes 43% of the total greenhouse gas emissions (see Figure 1). Residential, commercial, and industrial emissions amount to about 50% while the closed landfill and solid waste adds the remaining 10% (approx.) of the community's total greenhouse gas emissions.

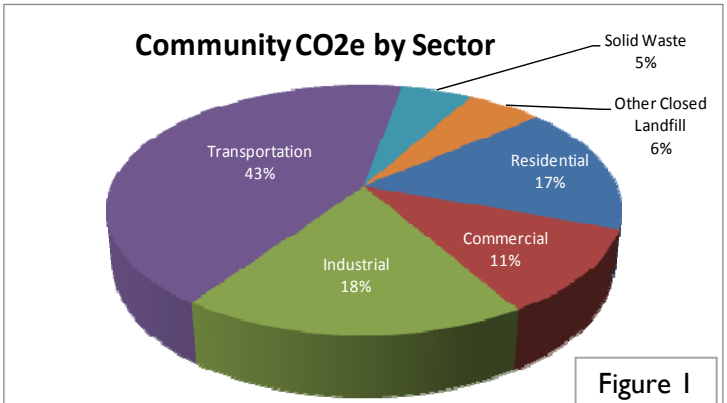


Figure 1

Community Results by Source

Fifty-six percent (56%) of the total equivalent greenhouse gas emissions are generated directly within the City limits, while the remaining 44% are generated elsewhere in the Upstate by the electric utility provider and solid waste facility, where refuse is deposited outside the boundaries of the community. These displaced emissions are incorporated in this inventory because the electrical power was consumed within the community and the solid waste was generated within the community.

The single greatest source of energy used within the City of Greenville is in the form of electrical power, which accounts for 39% of emissions. Additionally, transportation fuels combine to represent 43%, which points to large transportation sector contributions (see Figure 2).

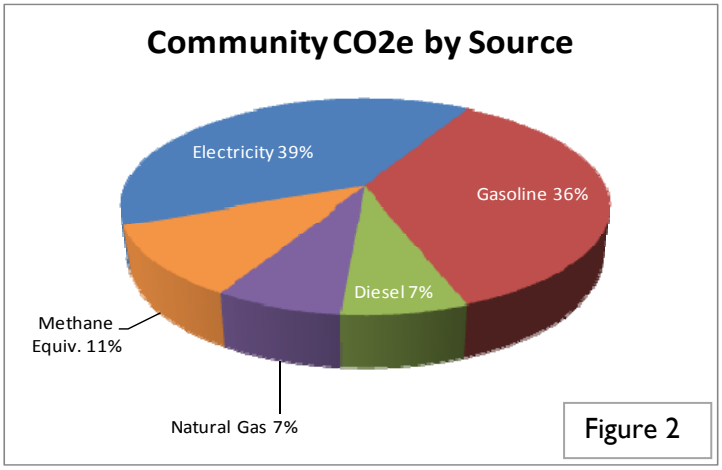


Figure 2

Each community's greenhouse gas emissions can vary greatly by climate, square miles, variations in population, degree of commercial and industrial entities, and in daily variations in transportation requirements. It is therefore imprudent to compare Greenville with other communities.

Government Analysis and Results

Within the governmental operations of the City of Greenville the total includes greenhouse gas emissions from the following sectors:

•Closed Landfill •Building and Facilities •Streetlights and Traffic Signals •Employee Commute
•Vehicle Fleet •Transit Fleet •Mobile Source Refrigerants •Wastewater Pump Stations •Solid Waste

Data collection was made possible by third party vendors such as utility companies and engineering firms. Cooperative efforts by the City employees and key City departments afforded reliable data for collection.

Government Results by Sector

The City of Greenville's governmental operations for the calendar year 2008 produced a total of 128,459 metric tons of CO_2 equivalent emissions. This reflects greenhouse gas emissions generated by operational activities associated with government functions and is a subsection of the Community Inventory. The closed landfill facility on Mauldin Road, operated between 1962 and 1995, is still generating a large amount of greenhouse gasses in comparison to other emissions (see Figure 3). Quarterly methane monitoring reports already indicate a reduction in off-gassing over time, but it will continue to be a relatively large contributor to total emissions for years to come. In general, when a city owns a landfill site it is predictable that it is by far the greatest producer of emissions.

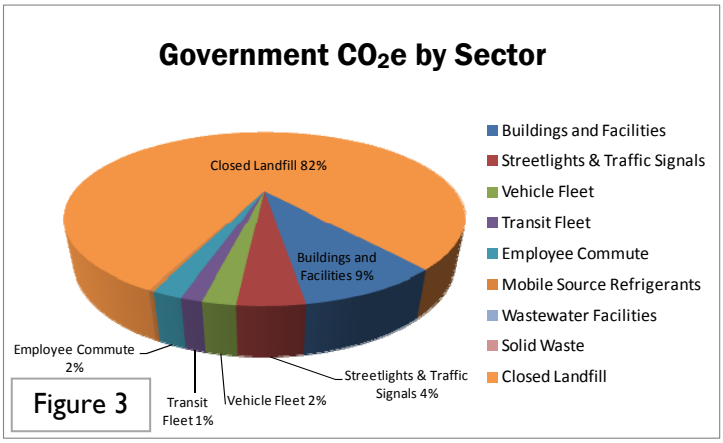


Figure 3

Removing the closed landfill CO_2 equivalent emissions from the sector totals, (see Figure 4) uncovers other sectors within the City's operations that contribute emissions and can be targeted for reduction efforts. Buildings and facilities comprise nearly 50% of greenhouse gas emissions, while streetlights and traffic signals contribute 22%. The City's 523 vehicles total 2,604 tons and the transit fleet produced another 1,700 tons of CO_2 equivalent emissions. The 869 employees commuting to and from work emitted 2,376 tons of CO_2 equivalents in Greenville. Therefore, at the government operations level, the transportation sector contributes a large amount of emissions (approximately 28%).

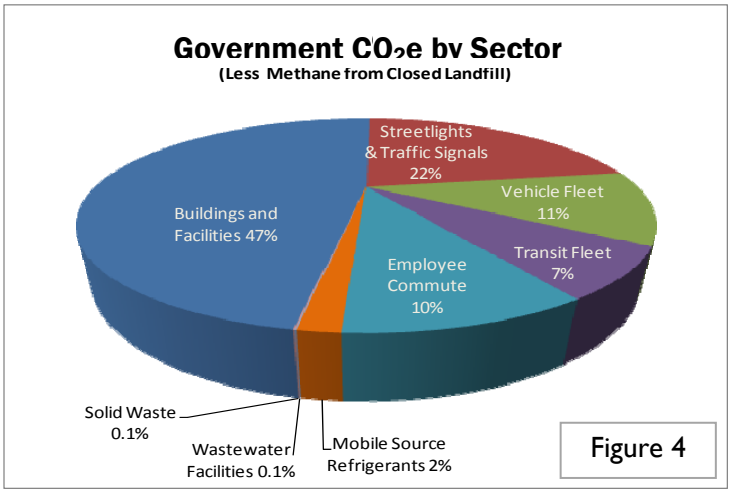


Figure 4

Government Results by Source

Methane generated within the closed City landfill emits 105,000 tons of CO_2 equivalents which outweigh the remaining government sources of greenhouse gas emissions totaling 23,459 tons (see Figure 5).

Removing the closed landfill CO_2 equivalent emissions from the source totals uncovers other sources of greenhouse gas production within government operations (see Fig. 6).

Electricity totals 66% of source emissions, typical for city operations. The City of Greenville's fleet, including transit, and the commute of its employees dictate use of diesel fuel, gasoline, and ethanol, contributing 28% to greenhouse gas emissions.

The burning of natural gas used for heating buildings represents 4% of the greenhouse gas emissions. Small amounts of refrigerant, sourced from vehicle air conditioners that leak, contribute a large amount of CO_2 greenhouse gas equivalent. A lesser contributor is fuel oil used in testing and maintaining of a backup emergency generator used at the City Hall for the emergency 911 call center.

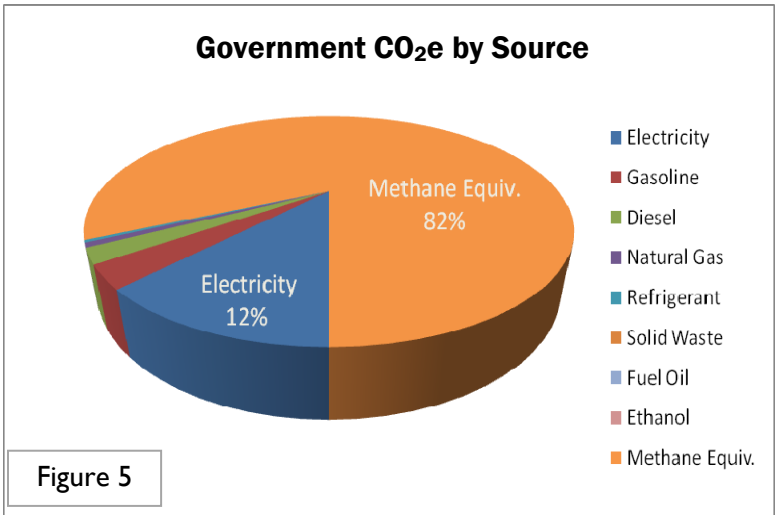


Figure 5

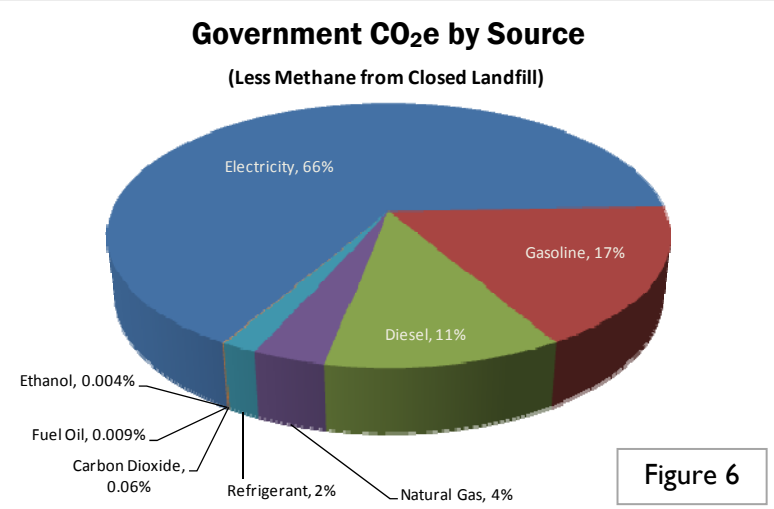


Figure 6

Data and Software Limitations

There are several software and data collection limitations that in-turn limited the accuracy of the data and results found in this report. However, this report is not intended to be an exact accounting of emissions data. It is, however, accurate enough to document trends and to be used as a resource in developing initiatives to reduce emissions.

Data

The greenhouse gas emissions inventories are based on the best available data from comprehensive efforts to uncover the most reliable and complete sources of information. The project followed quantification and reporting guidelines set in the Local Government Operations Protocol (LGOP), developed by ICLEI- Local Governments for Sustainability, The Climate Registry, California Climate Action Registry, and the California Air Resource Board. The recommended approach specified in the guidelines was followed when data or methodology was available. The Community inventory was directed by the CACP software, as an operations protocol for community inventories had not yet been defined.

Due to lack of available data or other limitations, there were occasions where assumptions, sampling, modeling calculators, proxy figures, or gross numbers were applied, and, when applicable, followed acceptable methods defined in the LGOP. For each measure and data collection method, efforts were made to ensure that the process is reproducible when future inventories are conducted. Such attention to detail has ensured that future accounting will follow the same methodology with the goal to ultimately improve internal validity and reliability of the data. In addition, the practical selection for sector inclusion in the inventory, especially Scope 3 emissions, directly affects the comprehensiveness of this inventory.

Software

The Clean Air Climate Protection (CACP) software utilized in this inventory has certain limitations that limit the accuracy of the data and results. The software bases emissions calculations, in part, on national and local averages as well as standards specific to known greenhouse gas emissions in specific sectors. Inherent in the use of this software and in the use of these standards are assumptions and limitations limiting accuracy. The most up-to-date version of the CACP software available at the start of this project, released in January 2010 (v. 2.2) was used to complete this inventory.

The CACP software captures most sources relevant to providing a tally on greenhouse emissions liability limited to the Kyoto protocol greenhouse gasses. The software does not provide direct accounting of emissions that were avoided. These avoided emissions are referenced in the "Unaccounted Actions" section of this report.

Unaccounted Actions

There are many examples of City initiatives that are not accounted for in this greenhouse gas emissions inventory. Many of these efforts have been underway for years; listed here are just a few examples of these efforts. Tree planting projects by Trees Greenville and the Greenville Tree Foundation within the community can sequester carbon dioxide at a rate of one ton annually per 50 mature trees. The recycling programs supported by the City of Greenville have diverted hundreds of tons from entering the normal waste stream, including over 2,000 tons of biodegradable material (yard waste) in 2008. The Building Maintenance Division captures, removes, and recycles refrigerant from decommissioned window air conditioners and refrigerators, thus avoiding countless pounds of refrigerant accidentally being released into the atmosphere. And as a final example, a few City employees walk or bicycle to work, thus avoiding several tons of emissions from automobiles. Each of these efforts has helped to reduce the City's carbon footprint.

Looking Forward

Several initiatives have been started and/or completed following the 2008 baseline year. While the impact of such efforts will not be calculated until another inventory is completed, these initiatives should be recognized as steps the City has taken to reduce its carbon footprint. A partial, yet representative, list includes: major upgrades to heating and cooling system at the Carolina First Center, improvements to bicycling and walking infrastructure, purchase of lower emitting transit and City fleet vehicles, conducting a comprehensive energy audit of City buildings and energy services contract for energy efficient upgrades, traffic light changeover to efficient LED lighting and the installation of electric vehicle charging stations. The City is already exploring other ways to make a meaningful impact and reduce its carbon footprint while being fiscally responsible. This Greenhouse Gas Emissions Inventory will be used as a data source and guide by the recently established Green Ribbon Advisory Committee when evaluating potential initiatives and in the creation of a "Sustainability and Climate Action Plan."

Dana Souza
Director, Parks and Recreation

Brian Graham
Greenway and Sustainability Manager
www.GreenvilleSC.gov/Sustainability

Providing diverse, exceptional and sustainable services to the community through innovative and collaborative practices is the mission of the Greenville Parks & Recreation Department.

Efficient Energy Advisors, LLC

Terry Logan, Ph.D.
Scientist and Consultant

Hans Hoogeveen, ACEM
Sustainability Director

The mission of Efficient Energy Advisors, LLC is to provide technical services in energy efficiency, renewable energy, indoor air quality, greenhouse gas inventory, and business sustainability for commercial, institutional, and municipal clients. Our goal is to reduce energy costs and unhealthy environments for our customers, provide them with more sustainable energy and business solutions, and advise them of important regulations and financial incentives.

Appendix D: U.S. Mayors Climate Protection Agreement

RESOLUTION NO. 2006-50

A RESOLUTION

ENDORSING THE US MAYORS' CLIMATE PROTECTION AGREEMENT

WHEREAS, Mayors from around the nation have signed the U.S. Mayors Climate Protection Agreement which, urges the federal government and state governments to enact policies and programs to meet or beat the target of reducing global warming pollution levels up to 7 percent below 1990 levels by 2002, including effect to: reduce the United States' dependence on fossil fuels and accelerate the development of clean, economical energy resources; and,

WHEREAS, State and local governments throughout the United States are adopting emission reduction targets and programs and that this leadership is bipartisan, coming from Republican and Democratic governors and mayors alike; and,

WHEREAS, many cities throughout the nation, both large and small, are reducing global warming pollutants through programs that provide economic and quality of life benefits such as reduced energy bills, green space preservation, air quality improvements, reduced traffic congestion, improved transportation choices, and economic development and job creation through energy conversation and new energy technologies; and,

WHEREAS, The City of Greenville supports efforts to urge the U.S. Congress to pass bipartisan greenhouse gas reduction legislation that includes 1) clear timetables and emissions limits and 2) a flexible, market-based system of tradable allowances among emitting industries. The City of Greenville will strive to meet or exceed Kyoto Protocol targets for reducing global warming pollution by taking actions in our own operations and communities such as: 1. Partner with community entities to inventory global warming emissions in City operations and in the community, set reduction targets and create an action plan, 2. Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities, 3. Promote transportation options such as bicycle trails, commute trip reduction programs, incentives for car pooling and public transit, 4. Increase the use of clean, alternative energy; 5. Make energy efficiency a priority through building code improvements, retrofitting city facilities with energy efficient lighting and urging employees to conserve energy and save money, 6. Purchase energy conversation equipment and appliances for City use, 7. Continue to practice and promote sustainable building practices using the U.S. Green Building Council's LEED program or a similar system, 8. Increase the average fuel efficiency of municipal fleet vehicles when possible; reduce the number of vehicles where possible; launch an employee education program including anti-idling messages; convert diesel vehicles to bio-diesel, 9.Urge the community to evaluate opportunities to increase pump efficiency in water and wastewater systems; recover wastewater treatment methane for energy production, 10. Increase recycling rates in City operations and in the community, 11. Help educate the public, schools, other jurisdictions, professional associations, business and industry about reducing global warming pollution.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND COUNCIL OF THE CITY OF GREENVILLE, SOUTH CAROLINA TO ENDORSE THE US MAYORS' CLIMATE PROTECTION AGREEMENT.

RESOLVED THIS 10TH DAY OF JULY, 2006.

Mayor

Attest:

City Clerk

Appendix E: Endnotes

[i] Comprehensive Plan: Environmental Strategies (6.1.2)
[ii] Comprehensive Plan: Environmental Strategies (6.1.5)
[iii] Comprehensive Plan: Environmental Strategies (9.1.6)
[iv] Bicycle Master Plan, September 2011
[v] June 14, 2011 Public Workshop: Mobility Recommendations
[vi] Bicycle Master Plan: Recommendations; June 14, 2011 Public Workshop: Mobility Recommendations; Comprehensive Plan: Transportation Strategies (3.2.8)
[vii] Trails and Greenways Master Plan, January 2008
[viii] Transit Vision and Master Plan, July 2010
[ix] Transit Vision and Master Plan: Action Plan & Summary (8.1)
[x] June 14, 2011 Public Workshop: Mobility Recommendations
[xi] Comprehensive Plan: Transportation Strategies (3.1.1) (3.1.8) (3.3.1)
[xii] June 14, 2011 Public Workshop: Mobility Recommendations; Comprehensive Plan: Environmental Strategies (3.1.11)
[xiii] June 14, 2011 Public Workshop: Recycling and Waste Management Recommendations; Comprehensive Plan: Environmental Strategies (3.1.4)
[xiv] Comprehensive Plan: Environmental Strategies (3.1.7)
[xv] June 14, 2011 Public Workshop: Recycling and Waste Management Recommendations; Comprehensive Plan: Environmental Strategies (5.1.1) (5.1.5) (7.1.4)
[xvi] Comprehensive Plan: Environmental Strategies (2.1.4)
[xvii] June 14, 2011 Public Workshop: Energy & Buildings Recommendations
[xviii] Consolidated Plan: Goal 1, Object 5
[xix] June 14, 2011 Public Workshop: Energy & Buildings Recommendations; Consolidated Plan: Goal 1, Object 5
[xx] June 14, 2011 Public Workshop: Energy & Buildings Recommendations
[xxi] Comprehensive Plan: Environmental Strategies (9.1.2)
[xxii] Comprehensive Plan: Environmental Strategies (9.1.1)
[xxiii] June 14, 2011 Public Workshop: Miscellaneous Recommendations; Comprehensive Plan: Community Health (1.3) (6.1-6.3)
[xxiv] Comprehensive Plan: Environmental Strategies (5.1.3)